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Knowledge and Perceptions of Overweight Employees about Lifestyle-Related Health Benefit Changes

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Abstract

Background—We investigated overweight state employees' perceptions about health insurance benefit changes designed to reduce the scope of health benefits for employees who were obese or smoked.

Methods—Prior to implementation of health benefit plan changes, 658 overweight [body mass index (BMI) ≥ 25 kg/m²] state employees enrolled in a weight loss intervention study were asked about their attitudes and beliefs of the new benefit plan changes.

Results—Thirty-one percent of employees with a BMI ≥ 40 kg/m² were unaware that their current BMI would place them in a higher risk benefit plan. More than half reported that the new benefit change would motivate them to make behavioral changes, but less than half felt confident in making changes. Respondents with a BMI ≥ 40 kg/m² were more likely to oppose the new changes focused on BMI categories compared to respondents in lower BMI categories ($P < 0.0001$). Current smokers were more likely to oppose the new benefit change focused on tobacco use than former smokers and non-smokers ($P < 0.01$).

Limitations—Participants represented a sample of employees enrolled in a weight loss study, limiting generalizability to the larger population of state employees.

Conclusions—Benefit plan changes that require employees who are obese or smoke to pay more for health care may motivate some, but not all, individuals to change their behaviors. Since confidence to lose weight was lowest among those in the highest weight categories, health plan benefit modifications may be required to achieve desired health behavior changes.

Keywords

Workplace health promotion; Health benefits; Smoking; Obesity; Policy change

Behavioral risk factors such as smoking and obesity are associated with an increase in many preventable chronic diseases which affect the health of working adults, as well as influence the financial health of employers. For example, obesity is estimated to cost employers \$73.1 billion annually [1], and tobacco use is estimated to cost employers \$75.5 billion annually, both in direct medical costs [2].

As health care premiums rise, employers are increasingly looking for ways to maintain or reduce costs [3–7]. According to a nationally representative survey of employers in 2009, 21% reported that in response to the economic downturn, they reduced the scope of health benefits or increased cost sharing [8]. From the perspective of employers, health insurance surcharges or limiting benefits for employees with risk factors associated with leading chronic diseases such as smoking and obesity, may be considered a more desired option than other forms of cost shifting [3]. Although these surcharges are an additional financial burden to high-risk employees, one possible benefit is that these surcharges may increase motivation in these individuals to quit smoking or lose weight. However, little is known about employee perceptions of these changes prior to implementation, or whether employees are motivated to consider making a behavioral change, or confident in their ability to make desired health changes. Consequently, data-driven guidance is lacking for those constructing health benefit changes.

In North Carolina (NC) during 2010, approximately 661,000 state employees have health insurance as a benefit that is covered by the State Health Plan for Teachers and State Employees. In April 2009, NC Senate Bill 287 became law and the Comprehensive Wellness Initiative went into effect [9]. For years, enrolled employees were automatically enrolled in an 80/20 health benefit plan, where 80% of health care costs were covered and employees were required to pay 20%. Beginning in July 2010, all state employees were enrolled into a 70/30 health benefit plan, where 70% of health care costs were covered and employees were required to pay 30%. If an enrolled employee or any additional covered dependents reported being a nonsmoker, he/she was eligible to stay in the 80/20 plan.

In July 2011, the NC State Health Plan change in benefits related to weight goes into effect. As planned, all employees will be automatically enrolled into the 70/30 health benefit plan unless they attest to being a non-smoker and to having a body mass index (BMI) below 40 kg/m², calculated as weight in kilograms divided by height in meters squared. In 2012, employees will be automatically enrolled in the 70/30 health benefit plan unless they report to being a non-smoker and having a BMI below 35 kg/m².

In this study, we assessed the awareness, attitudes, beliefs, and motivation of overweight state employees covered by the NC State Health Plan who would be directly affected by these health plan changes prior to the health benefit changes going into effect. In addition, we examined variations in employee attitudes based on their BMI and smoking status. The following hypotheses were tested:

- Employees' perception of their BMI status will not necessarily match their actual (measured) BMI status.

- Employees in the highest BMI categories would be less likely to favor the new benefit plan changes, to believe in its potential for helping employees lose weight, and to report confidence in their ability to lose weight compared to employees in lower BMI categories.
- Overweight employees who smoke would be less likely to favor the new benefit plan changes or believe in its potential for helping employees quit smoking compared with former smokers and non-smokers.

METHODS

Sample

In October-November 2008, 1020 employees from 12 NC colleges and universities, age 18 or older, with a BMI of 25 kg/m² or greater were enrolled in the NC WAY (Worksite Activities for You) to Health research study, a group randomized, controlled trial designed to examine the effectiveness of a Web-based weight loss program and cash incentives for weight loss. Employees were excluded if they were not a member of the State Health Plan, were not a permanent, full-time employee at a participating campus, had Type 1 diabetes, were currently pregnant or breastfeeding, had lost greater than 20 pounds in the past 6 months, or were currently taking weight loss medication. Those who responded to having a malignancy requiring chemotherapy or radiation in past 5 years, answered yes to any of the Physical Activity Readiness Questionnaire (PAR-Q) questions [10], or had a BMI of 42 kg/m² or greater were required to obtain physician's consent prior to participating in the study.

In October-November 2009, 690 (68% response rate) participants completed a 12-month WAY to Health follow-up assessment by completing a survey which included questions about the new State Health Plan changes reported here. Next, they attended an onsite assessment to measure actual height and weight (at that time they received a handout with BMI calculated based on measured height/weight). Only employees with a BMI \geq 25 at the 12-month assessment were included in this analysis (N=658). The University of NC, all participating universities, and Duke-National University of Singapore Institutional Review Boards approved this recruitment protocol and all study procedures.

Measures

We described the new smoking and obesity-related benefit changes to participants before asking them questions about the new State Health Plan benefit changes (Table 1). Key socio-demographic characteristics were self-reported. The responses to several open-ended questions about both smoking and weight-related benefit changes, and preferred intervention options, were also summarized.

Smokers were categorized as current, former, or never smokers based on responses to two questions: "Have you ever smoked 100 cigarettes in your lifetime?" and, "Do you currently smoke cigarettes or not?" Respondents who currently smoked cigarettes were categorized as current smokers; those who currently do not smoke, but have smoked 100 cigarettes in their

lifetime were categorized as former smokers; and those who currently do not smoke, and have never smoked 100 cigarettes in their lifetime were categorized as non-smokers.

Height and weight were measured by trained staff using standardized protocols on all participants to calculate the BMI at baseline, 3, 6, 12 and 18-month assessments. For the purpose of the analysis, BMI at the 12-month assessment was categorized using the conventional categories for overweight (25–29.9), obese Class I (30–34.9), obese Class II (35–39.9), and obese Class III (≥ 40). Respondents were asked about their current BMI status prior to the on-site measurements. They did not have actual BMI calculated until a member of the research team did the on-site height and weight measurements. At each follow-up measurement (3, 6 and 12 months), participants were given their BMI results on a handout after being measured.

Statistical Analysis

Because the study was a group randomized controlled trial and the data were clustered by university or college, respondents and non-respondents were compared using Rao-Scott Chi-Square tests. The self-reported BMI categories and measured BMI categories were compared using McNemar's test. Next, we used Rao-Scott Chi-Square tests to compare attitudes and beliefs by BMI and smoking categories, accounting for the clustered nature of the data. Other characteristics of the respondents (e.g., age, gender, race, education, household income, marital status, current health status) were not significantly associated with the attitudes or beliefs regarding the health plan changes, controlling for the respondents' BMI category and smoking status, so these results were not included in this paper. Statistical analyses were performed using SAS Version 9.2.

RESULTS

Participants

Table 2 shows a comparison of respondent and non-respondent characteristics. There was no significant difference between respondents and non-respondents except that the respondents were more likely to be staff (72.8% vs. 52.2%, $P=0.0171$). Of the 658 respondents, most were staff (72.8%) (vs. faculty), female (80.5%), White (48.2%), married (53.8%), and held an Associates or Bachelor's degree (45.4%) (Table 2). The average age of the participants was 46 years ($SD=9.9$ years), with ages ranging from 21 to 76. Among respondents, 179 (27.2%) were former smokers and 38 (5.8%) were current smokers; 245 (37.2%) of the respondents had a BMI ≥ 35 , and 108 (16.4%) had a BMI ≥ 40 .

Perceived Compared to Measured BMI and Beliefs about Health Benefit Changes

When asked to self-report BMI, thirty-one percent of respondents with measured BMI ≥ 40 reported that their BMI was below 40 and so they believed they would not be affected by the plan change in 2011. In contrast, 12.0% of respondents with measured BMI <40 believed their BMI to be ≥ 40 ($P=0.0012$). Nearly half (47.0%) of those with a measured BMI ≥ 35 , misclassified themselves as having a BMI below 35, while only 10% of those with measured BMI below 35 believed their BMI was ≥ 35 ($P<0.0001$). Thus, more respondents under-

estimated their BMI which would affect their understanding of the potential impact of the benefit plan change.

Attitudes and Beliefs about the State Health Plan Benefit Change on Obesity

Overall, 47.2% of overweight respondents opposed the new State Health Plan benefit change focused on BMI, while 52.8% thought it was a good idea “to some extent”, “to a greater extent” or “to a significant extent. When asked if the health benefit change would help employees lose weight, 16.1% provided favorable responses, while 45.6% did not believe that the benefit plan would help employees lose weight. Respondents with a BMI ≥ 40 were significantly more likely to oppose the new health benefit change compared to respondents in other BMI categories (Table 3). Moreover, respondents with BMI ≥ 40 were more likely to report that the new health benefit change would not be effective in helping employees lose weight (Table 3). Respondents with a BMI ≥ 40 were significantly less likely to feel confident in losing weight to stay in the 80/20 plan compared to the respondents in lower BMI categories ($P<0.0001$) (Table 3).

Among these overweight and obese respondents, 18.5% reported that the new BMI-related health benefit change would increase their stress and make them gain weight, 32.5% reported they would maintain their current weight, 66.3% reported the benefit change would motivate them to increase physical activity, and 63.5% reported it would help them focus on making healthier food choices/smaller portions of food (Table 4).

Attitudes and Beliefs about the State Health Plan Benefit Change on Tobacco Use

Overall, 43.9% of the overweight or obese respondents opposed the new tobacco-related State Health Plan benefit change while 56.1% thought it was a good idea “to some extent”, “to a greater extent” or “to a significant extent. When asked if the new health benefit change would help smokers quit, 18.0% of the respondents provided a favorable response, while 51.6% did not report it would be helpful. Current smokers were more likely (71.1%) than the former smokers (40.4%) and non-smokers (43.1%) to oppose the new health benefit change related to tobacco use ($P<0.01$) (Table 5). Current smokers were also less likely (5.3%) to believe this new health benefit change will help smokers quit than were former smokers (23.6%) and non-smokers (16.5%) ($P=0.02$) (Table 5).

Most (68.4%) current smokers reported that the new smoking-related State Health Plan benefit change would motivate them to attempt to quit smoking, while 34.2% said the new smoking State Health Plan benefit change would increase their stress and make them smoke more (Table 4). Overall, 38.1% of current smokers felt confident in his/her ability to quit smoking to stay in the 80/20 plan.

DISCUSSION

At a time when employers and health plan administrators are trying to address rising health care costs, one available option gaining more traction is to shift the costs of high-risk health behaviors (e.g. obesity/smoking) onto employees. This cost-shift may place surcharges on high-risk behaviors within the context of health benefit plan changes, thus alleviating costs to the employer and shifting them to the high-risk employee. Yet there is very little

information about what employees think about these initiatives. This study took advantage of a unique opportunity to reveal attitudes and beliefs about health plan changes from overweight employees prior to the enactment of a new lifestyle-related health benefit plan change that would likely affect them directly given their weight status.

Our results indicate that many state employees who are likely to be affected by health plan changes related to BMI often underestimated their true BMI, and thus, did not understand that their weight would affect their health benefit plan status. Moreover, among these overweight or obese individuals, current smokers and those with higher BMI categories were less likely to report that the tobacco and weight-related benefit plan changes were a good idea, or would help them quit smoking or lose weight. Less than half of the current smokers were confident they would be able to quit smoking. Reported confidence to lose weight so as to maintain the desired 80/20 benefit plan status was also lower among higher BMI category individuals. These results have both policy and programmatic implications for employers planning similar health benefit plan changes and for those implementing these changes.

The fact that adults are unaware of their weight is consistent with the results of the National Health and Nutrition Examination Survey (NHANES 1999–2004), in which a large percentage of overweight respondents (38.0%) did not identify themselves to be overweight [11]. Ironically, this lack of awareness occurred even though our participants were enrolled in a weight loss study and had regular weight measurements as part of their participation, which should have increased their awareness compared to a general sample of overweight/obese employees. Adults also have difficulty understanding the meaning of BMI [12]. In this study, the questionnaire explained what the health plan benefit change was and both how and when it would be implemented. Yet even among study participants who were told about the benefit changes and were being weighed at regular intervals, a proportion of them were unable to categorize their BMI accurately and were therefore unaware of the need to take appropriate steps to avoid additional health care costs. Using annual cost estimates for overweight individuals [13], we determined that the actual average cost difference between the 80/20 plan and the 70/30 for obese individuals is roughly \$315 per year, on average. This figure represents 10% of the average annual costs of obese employees currently enrolled in the state health plan. Thus, It is important for plan administrators to communicate about policies so that individuals understand the potential costs they might face and can accurately determine their weight and BMI prior to implementation of the plan changes.

Overall the majority of overweight respondents in this study thought weight-related benefit plan changes were a good idea (52.8%); and a slightly higher percentage of respondents 56.1% thought that tobacco-related benefit plan changes were a good idea. To date, employers/insurers have been more willing to penalize smokers with higher premiums given the health risks and costs of smoking are well documented [14,15], and evidence-based treatment options exist even for highly addicted individuals. As norms about obesity change [16], and the literature about the beneficial treatment options and long-terms costs of obesity grows, employers/insurers and employees are likely to have different opinions about the value of higher premiums for overweight/obese employees. Ongoing research on this topic is warranted.

A majority of respondents believed that the SHP benefit change would motivate them to lose weight. However, less than half of the respondents were confident they would maintain a healthy weight and stay in the 80/20 plan. This suggests that employees recognize that weight loss is a serious commitment and that even among those who are motivated to lose weight, and have a benefit plan with incentives to encourage weight change, it remains challenging to do so [17]. Some respondents reported that the new State Health Plan benefit change would increase their stress and make them gain weight. No evidence exists to support that this new policy will make employees gain weight, but another implication of these results is that special interventions are likely to be required for those who have significant amounts of weight to lose, or who have difficulty losing weight [18,19]. Given participant responses to the open-ended questions about program preferences (data not shown), and effective treatment options, programs that are effective for weight gain prevention, for modest weight loss or maintenance, and programs that assist individuals who have large amounts of weight to lose are desirable. In addition, structural approaches to creating a safe and healthy work environment such as access to healthy, low-calorie food options or sponsoring fitness breaks are additional supports for those who are making weight-related health changes and are consistent with national recommendations for creating and sustaining a healthy workforce [20,21].

Strengths and Limitations

One strength of this study is that we have polled a large sample of employees who were overweight and thus at higher risk of being affected by these health plan changes prior to the implementation of the change. Yet, this is also the principal limitation, since participants were drawn from a sample of employees enrolled in a weight loss study and thus represent a select group of individuals who might not be generalizable to the larger population of state employees. Additionally, our employee sample over-represented women. Another limitation to the study is that people with BMI of 42 kg/m² or greater needed physician consent to enter the study—this requirement could make the characteristics of these participants different from those with a BMI<42.

CONCLUSIONS

Health benefit plan changes that require employees who are obese or smoke pay more for health care may motivate some individuals to change their behaviors. However, since confidence about one's ability to quit smoking or lose weight is lowest among those at the highest weight categories, more intensive interventions may be warranted. Communication efforts can assist employees in understanding the new health insurance benefit changes in advance of their implementation, including the potential costs they might face. Continued monitoring and evaluation of health plan benefit changes and the impact on all employees, including high-risk employees, is desirable. Future studies could assess smoking, weight, and cost-related changes resulting from the health plan policy to build the evidence base for the design and implementation of health benefit plan changes that produce desired behavioral outcomes, as well as to clarify for whom these interventions are most and least effective. While this paper explored employee attitudes and beliefs, future research is needed to understand the attitudes and motivations of health insurers/employers about making these

policy changes so that potential impact can be fully appreciated. Monitoring changes in attitudes and beliefs over time is also desirable given the changing norms, political will and other contextual factors that influence health in our culture.

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Table 1

Key measures about the NC State Health Plan benefits

Measure	Sample Question(s)	Response Options
Attitudes towards the new State Health Plan benefits	To what extent do you think these new State Health Plan benefit changes are a good idea?	The ordinal variable was coded as “Unfavorable” (“Not at all” and “To a little extent”), “Neutral” (“To some extent”) and “Favorable” (“To a greater extent” and “To a significant extent”)
Belief about effectiveness of new State Health Plan benefits	To what extent do you think this new State Health Plan benefit will help employees quit smoking (or lose weight)?	The ordinal variable was coded as “Unfavorable” (“Not at all” and “To a little extent”), “Neutral” (“To some extent”) and “Favorable” (“To a greater extent” and “To a significant extent”)
Motivation to try different methods of quitting smoking (or losing weight)	Will the new smoking State Health Plan benefit change motivate you to join a smoking cessation class or group? (or a weight loss class or group or online program)	Yes/No
Self-confidence about quitting smoking (or losing weight)	To what extent are you confident that you will be able to quit smoking (lose weight) so you can stay in the 80/20 plan?	The ordinal variable was coded as “Unfavorable” (“Not at all” and “To a little extent”), “Neutral” (“To some extent”) and “Favorable” (“To a greater extent” and “To a significant extent”)
Suggestions for health promotion programs	What do you think the Employee Wellness Committee can do to help you and/or employees on your campus quit smoking and avoid the use of tobacco products (or achieve and maintain a healthy weight)?	Open-ended
Comments on new State Health Plan benefits	Do you have any other comments about the State Health Plan benefit change?	Open-ended

Table 2

Characteristics of Respondents and Non-respondents

	Respondents (N=658)			Non-respondents (N=362)			Rao-Scott Chi-Square	P
	N	%		N	%			
Job classification							5.6848	0.0171
Missing	54	8.2		98	27.1			
Faculty	125	19		75	20.7			
Staff	479	72.8		189	52.2			
Gender								
Missing	37	5.6		102	28.2		0.6496	0.4203
Male	91	13.8		44	12.2			
Female	530	80.5		216	59.7			
Age							1.9536	0.3765
Missing	2	0.3		2	0.6			
<35	96	14.6		61	16.9			
35–54	406	61.7		227	62.7			
55 or older	154	23.4		72	19.9			
Race								
Missing	42	6.4		108	29.8		3.3034	0.1917
White	317	48.2		148	40.9			
Black or African American	251	38.1		87	24			
Other	48	7.4		19	5.3			
Marital status								
Missing	40	6.1		102	28.2		0.2535	0.6146
Married	354	53.8		153	42.3			
Unmarried	264	40.1		107	29.6			
Education								
Missing	37	5.6		101	27.9		4.1479	0.2459
High school graduate or less	27	4.1		13	3.6			
Some college or technical school but no degree	93	14.1		34	9.4			

	Respondents (N=658)		Non-respondents (N=362)		Rao-Scott Chi-Square	P
	N	%	N	%		
Associates or Bachelor's degree	299	45.4	114	31.5		
Post-graduate degree	202	30.7	100	27.6		
Annual Household Income					5.1011	0.2771
Missing	86	13.1	119	32.9		
\$0 – \$25,000	17	2.6	8	2.2		
\$25,001 – 50,000	210	31.9	75	20.7		
\$50,001 – 75,000	154	23.4	63	17.4		
\$75,001 – 100,000	108	16.4	55	15.2		
\$100,001+	83	12.6	42	11.6		
General Health					3.9249	0.4163
Missing	40	6.1	105	29		
Excellent	26	4	10	2.8		
Very good	160	24.3	79	21.8		
Good	318	48.3	131	36.2		
Fair	100	15.2	31	8.6		
Poor	14	2.1	6	1.7		
Smoking Status ^a					1.5054	0.4711
Missing	2	0.3	99	27.3		
Current Smoker	38	5.8	20	5.5		
Former Smoker	179	27.2	68	18.8		
Non-Smoker	439	66.7	175	48.3		
BMI Categories ^a						
Overweight (BMI 25–29.9)	218	33.1	122	33.7	3.2583	0.3535
Obese Class I (BMI 30–34.9)	195	29.6	111	30.7		
Obese Class II (BMI 35–39.9)	137	20.8	83	22.9		
Obese Class III (BMI ≥40)	108	16.4	46	12.7		

^a: The smoking and BMI categories were reported at the 12-month assessment for respondents and the baseline assessment for non-respondents.

Table 3

Attitudes and Beliefs about State Health Plan Changes by BMI Categories

	Overweight (BMI 25-29.9, N=218)		Obese Class I (BMI 30- 34.9, N=195)		Obese Class II (BMI 35- 39.9, N=137)		Obese Class III (BMI >=40, N=108)		<i>Rao- Scott Chi- Square</i>	P
	N	%	N	%	N	%	N	%		
Attitudes toward new State Health Plan benefits									33.31	<0.0001
Favorable ^a	69	32.1	34	17.6	19	13.9	11	10.4		
Neutral ^a	72	33.5	65	33.7	46	33.6	28	26.4		
Unfavorable ^a	74	34.4	94	48.7	72	52.6	67	63.2		
Belief about effectiveness of new State Health Plan benefits									16.81	0.01
Favorable ^a	48	22.3	29	15	15	10.9	13	12.1		
Neutral ^a	76	35.3	82	42.5	57	41.6	35	32.7		
Unfavorable ^a	91	42.3	82	42.5	65	47.4	59	55.1		
Self-confidence about losing weight									59.63	<0.0001
Favorable ^a	142	66.7	89	46.1	54	40.3	29	27.1		
Neutral ^a	46	21.6	60	31.1	49	36.6	37	34.6		
Unfavorable ^a	25	11.7	44	22.8	31	23.1	41	38.3		

^a: The original variable was recoded to "Unfavorable" ("Not at all" and "To a little extent"), "Neutral" ("To some extent") and "Favorable" ("To a greater extent" and "To a significant extent").

Table 4

Potential Behavioral Actions Motivated by the State Health Plan Changes

		Responded yes	%
Losing Weight (n=658)	Attempt to lose weight on your own	506	76.9
	Focus on increasing physical activity	436	66.3
	Focus on making healthier food choices/smaller portions of food	418	63.5
	Join a weight loss class or group or online program	217	33
	Maintain your current weight	214	32.5
	Look to join a research study that will help me lose weight	208	31.6
	Increase your stress and make you gain weight	122	18.5
	Get medication to help me lose weight	113	17.2
	Try hypnosis to help me lose weight	67	10.2
	Consider bariatric surgery	65	9.9
Quit Smoking (n=38) ^a	Attempt to quit smoking altogether	26	68.4
	Attempt to quit using tobacco products altogether	25	65.8
	Join a smoking cessation class or group	13	34.2
	Increase your stress and make you smoke more	13	34.2
	Use some kind of nicotine replacement therapy (gum or patch or nasal spray)	12	31.6
	Try hypnosis to quit smoking	11	28.9

^a: Only participants who were current smokers answered this question.

Table 5

Opinions about the State Health Plan Changes by Smoking Status

	Current Smoker			Former Smoker			Non-Smoker			<i>Rao-Scott Chi-Square</i>	P
	N	%		N	%		N	%			
To what extent do you think the new State Health Plan benefit change focused on tobacco use is a good idea?										13.96	<0.01
Favorable ^a	2	5.3		55	30.9		132	30.3			
Neutral ^a	9	23.7		51	28.7		116	26.6			
Unfavorable ^a	27	71.1		72	40.4		188	43.1			
To what extent do you believe the new State Health Plan benefit change focused on tobacco use will help smokers quit?										11.70	0.02
Favorable ^a	2	5.3		42	23.6		72	16.5			
Neutral ^a	10	26.3		51	28.7		131	30.0			
Unfavorable ^a	26	68.4		85	47.8		233	53.4			

^a : The original variable was recoded to "Unfavorable", "Neutral", "To a little extent", "To some extent", "Favorable", "To a greater extent" and "To a significant extent".